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ABSTRACT

The phenomenon known in cognitive psychology as U-shaped behavioral growth is discussed in relation to second language learning. The U-shaped growth concept focuses on the fact that some behaviors appear, disappear, and then apparently reappear over time. It has been documented in children's learning of physical concepts, musical concepts, artistic production, and first language acquisition. This paper focuses on the conditions under which U-shaped curves might occur, and especially on the role played by cross-linguistic influence. The data are drawn from some experiments conducted in the Netherlands and Finland with advanced second language learners. It is maintained that U- shaped learning behavior can be characterized as the external manifestation of a more general cognitive process. Further, it is suggested that U-shaped language development in both first and second language occurs in the area of morphology, in phraseology, and especially in connection with the learning of lexical items that covey complex semantic relations. Contains 13 references. (LB)

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IS THE PATTERN OF L2-LEARNING U-SHAPED ?

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The central issue examined in this paper is to find out whether or to what extent the phenomenon of U-shaped behaviour, which has been documented in different areas of children's learning, is applicable also to L2-learning. The study is focused on the conditions under which U-shaped curves might occur and especially on the role played by cross-linguistic influence. The data used are drawn from some experiments conducted in the Netherlands and Finland with advanced L2-learners.

1. Theoretical framework

The main pupose of this paper is to discuss the well-known phenomenon in cognitive psychology, viz that some behaviours appear, disappear, then apparently reappear over time. This phenomenon, commonly known as U-shaped behavioral growth, has been documented in a number of areas, for instance in children's learning of physical concepts, musical concepts, artistic production, and first language acquisition (Strauss 1982:xiv). The phenomenon has been described as follows:

> **Very young children produce correct linguistic constructions or correctly solve certain tasks; intermediate age children no longer produce these correct constructions or solve these tasks incorrectly; still older children once again produce the correct constructions and solve these tasks correctly. (Strauss & Stein 1978: 326)**

So far there has been no clear theoretical framework which would fully explain these findings. The position taken here is that the documented instances of U-shaped learning "are a result of some kind of reorganization of the ways one represents one's world, be it the physical world, language, music, etc." (Strauss 1982:2). The drops and rises are thus theoretically interesting because they are long-term, stable, and general.

The focus of this paper will be on the possible applicability of the U-shaped curve in L2-learning. Kellerman (1985) maintains in a recent article that the phenomenon of U-shaped learning is evident also in L2-learners' attempted target language performance. Kellerman also maintains that his experimental data indicate that cross-linguistic influence plays a critical role in the manifestation of U-shaped behaviour in L2-learning. (Kellerman

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1985:348). It also seems that the avoidance behaviour documented in L2-learning and acquisition is relatable to the theoretical framework constituted by U-shaped L2-learning. (cf Kleinmann 1977; Dagut & Laufer 1985).

2. The aim and scope of the study

The aim of this study is an attempt to describe the L2-learning process in terms of the general framework of U-shaped behaviour, i.e. the same kind of U-shaped curves as those evident in children's L1 acquisition, in children's learning of physical concepts, musical concepts etc. The language data used (mostly English as a second language) is learnt in instructional settings and elicited by means of various written elicitation techniques. This study will be based on the results of some experiments conducted with Dutch-speaking learners of English and German in the Netherlands (Jordens 1977; Kellerman 1977, 1979). These studies treated Dutch-speaking learners' inclination to transfer language-specific, Dutch-based language material. The studies above will be compared with a similar study carried out in Finland (Sjöholm 1986).

Kellerman maintains in a recent article that his and Jordens' data (in addition to a few other studies) may be reinterpreted as U-shaped L2-development. The L2 development could be characterized as three distinct stages. In the first, naive stage, the learner's performance approximates that of the target language norm. In the second stage there is a drop in the performance i.e. the forms tend to deviate from the target norm. Finally, in stage 3, the nontarget forms of stage 2 disappear and the learner seems to return to the targetlike forms.

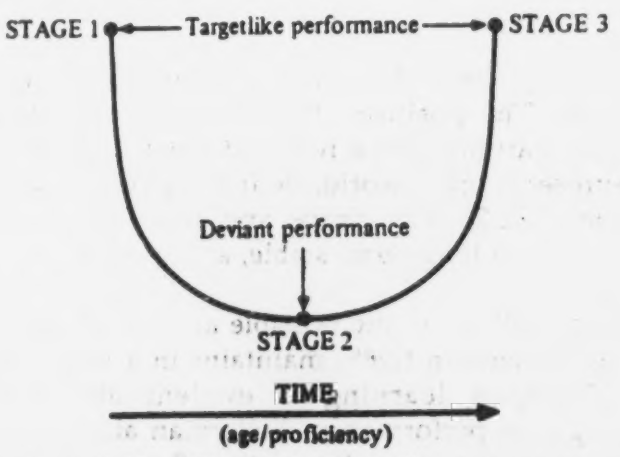

Figure 1. U-shaped behaviour (according to Kellerman 1985:346)

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Because the research into U-shaped learning in L2 so far is almost non-existent, no definite answers are to be expected to the research questions posed below. The answers may perhaps be given as preliminary hypotheses, which after further empirical studies may be either rejected or accepted. The following three issues will be discussed in some detail.

1. Is there any general theoretical explanation of U-curves which is also applicable to data derived from L2-learning ?

2. Are there, in L2-learning, any specific linguistic domains in which U-shaped learning is to be expected ?

3. What are the conditions that allow U-shaped versus non-U-shaped performance in L2-learning ?

3. Theories of U-shaped behaviour

In areas other than L2-learning, U-shaped behaviour has often been explained as representing progressive cognitive change from a global, non-analyzed reasoning (stage l) to one which is more differentiated and rule-bound (stage 2), and finally developing to a reasoning indicating a separation and coordination of rules (Strauss & Stein 1978:330). Ervins data about children's acquisition of the morphological system of English verbs and nouns may serve as an example of U-shaped behaviour (in Ll acquisition). Ervin (1964) observed that the plural suffixes of nouns were learnt in the following three sequential stages.

Stage l: book-books; car-cars; box-boxes; foot-feet
Stage 2: book-books-bookses; foot-foots-feet
Stage 3: book-books; box-boxes; foot-feet

The prevailing conception of how to account for these interesting findings is the following. At stage one, the children learnt the plural allomorphs each as a separate lexical item. In other words, they were unanalyzed which implies that children do not relate the pairs book-books and foot-feet to one another. Stage two represents the phase when children become aware of the relation between the singular and the plural. The drop in correct usage reflects "the time wherein the child is testing his hypothesized rules and is applying them to irregular forms which were previously correct but unanalyzed." (Strauss & Stein 1978:332). Finally, in the third stage, the learner's correct usage of plural suffixes is characterized by a separation of irregular nouns from regular rules.

Bowerman's (1974) data about the development of children's mastery of

causative constructions in English seem to follow a similar U-shap pattern. At stage one, the semantics of for instance the verb open does t contain the semantic distinction between causative and non-causat meanings. The meanings of open is global, undifferentiated a unanalyzed. At stage two, the learner becomes aware of the distinct bewteen causative and non-causative verbs. In the case of open, t distinction is not marked morphologically. Children, however, begin produce new causative verbs and new morphologically mark constructions (often erroneously), which leads to a drop in the performa (the hypothesis testing phase). At stage three, the causative/non-causat distinction is fully differentiated which leads to a return to correct forms Bowerman 1982:106-110). Bowerman (1974) suspects, however, that t unanalyzed versus analyzed distinction does not fully account for t difference between stage one open and stage three open. She suggests th stage one forms in addition to being unanalyzed reflect a model knowledge characterized as a general nonlinguistic sensorimot understanding. The stage three forms indicate that a shift from c knowledge system of representation to another has taken place.

Strauss & Stein have made an attempt to specify the conditions unc which U-shaped versus non-U-shaped performances tend to occur. T first condition that brings about the U-shaped curve is that "the ad language is such that the mapping rules relating semantic distinctions li plurality, tense, causative ... to morphological forms are complex, admitti of ad hoc classes." (Strauss & Stein 1978:338). The second condition is th the linguistic construction has a thing-of-action as a referent, which t child may construct a sensorimotor knowledge about.

4. U-shaped development in L2-learning ? (the Netherlands).

The question to be asked is now whether the theories on U-shaped grow reported on above have any bearing on the learning of L2. Kellerman (198 maintains that some of his data seem to indicate that U-shaped langua growth is typical of certain areas of L2-learning. His subjects were Dutc speaking school children who have read English at school as well students of English at university level. In his experiments he tries to fi out to what extent subjects representing different age groups tend to accep English translations of Dutch-based transitive and intransitive forms breken (break). Kellerman demonstrates that transitive and intransiti break are accepted to the same extent (100 %) to the age of 17, but after there is a marked drop in the performance for intransitive break.

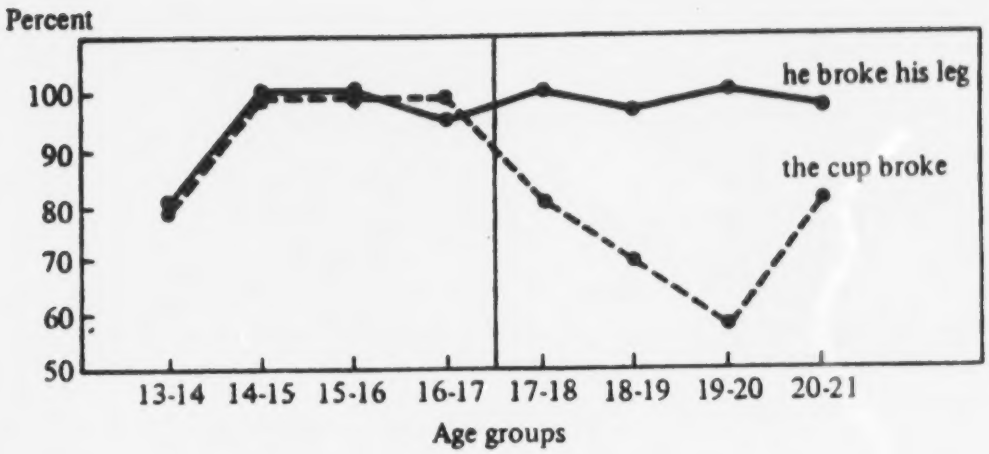

Figure 2. Performance on transitive/intransitive break (Kellerman 1985:349)

Kellerman contends that the U-shaped curve for intransitive break indicates the learner's sensitivity to the semantic distinction (implicitly known) between the causative and non-causative meanings of a single verb. In this case non-causativity (verbs that lack an animate agent) seems to be conceived of as odd and peculiar and is thus perceived as language-specific in Dutch and not transferable to English (stage 2). Younger learners (stage 1) who are less sophisticated metalinguistically, seem to be unconcerned about these distinctions (Kellerman 1985:348-349). In another experiment Jordens (1977) examined to what extent Dutch-speaking university students of German accepted idiomatic expressions. His experiment indicatad that first-year students (age 18-19) tended to accept Dutch-based translations to German (irrespective of whether these were correct German or not), whereas the same idioms were rejected as incorrect by second-year students (age 19-20). Third-year students, however, were able to make a distinction between the expressions that were possible in German and those that were not. In terms of U-shaped behaviour, Jordens's first-year students probably used a global strategy, i.e. L1 structure (including all kinds of idiomatic expressions) serves as a reasonable source of prediction about the form of L2, leading to positive transfer (stage 1). In Jordens's stage two, the learner has become aware of the distinction between figurative and literal meanings in idiomatic expressions. Idiomatic expressions with figurative meanings are perceived as specific for Dutch and tend not to be

transferred to German, which could lead to a drop in the performance. At stage three, the learner is able to differentiate between idioms with figurative meanings and is approaching a near-native competence in the usage of idiomatic expressions. Kellerman conducted a similar experiment with Dutch-speaking university students of English. His subjects tended to reject Dutch-based idioms even earlier (the first year) than Jordens's subjects, which he explained, could be due to the fact that the differences between Dutch and English (at least at the phraseological level) are greater than between Dutch and German (cf. Kellerman 1977:125).

5. U-shaped development in L2-learning ? (Finland)

In the following, some studies in Finland similar to those in the Netherlands will be presented (described in detail in Sjöholm 1986). These studies examine the Ll influence evidenced in Finnish- as well as Swedish-speaking pupils' learning of English at the upper secondary school level (gymnasium). In the first study, a combined multiple choice and completion test on prepositions was given to 17-year old (first form) as well as 18-year old (second form) upper secondary school pupils (some 500). The tests (20 items) were sent to Swedish- as well as Finnish-speaking schools in different parts of the country. In addition to filling in the test, the pupils were asked to judge how certain they felt about the correctness of their answers on a five-grade scale. In cases when they felt uncertain they were asked to suggest plausible sources of influence (from a list of given sources of influence). Although this method is not the most reliable, the results might give a crude picture of to what extent different linguistic structures serve as sources of prediction about L2 forms. The diagram below (figue 3) illustrates the 17 year- and 18-year old pupils' belief in Ll as a plausible source of influence.

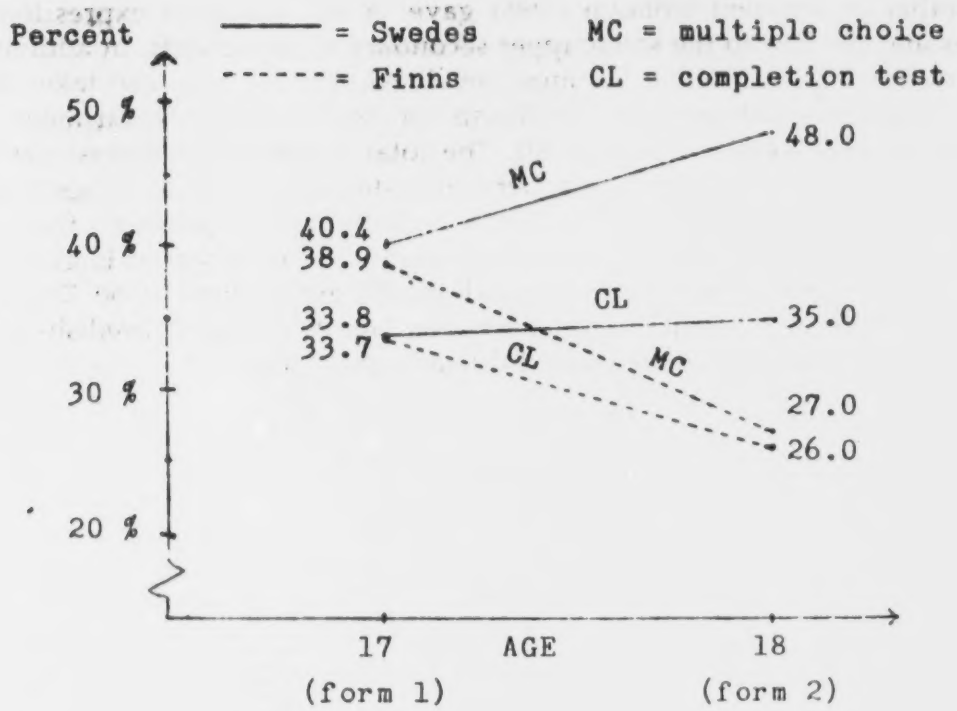

Figure 3. Swedish- and Finnish-speaking secondary school pupils' belief in L1 as a source of influence

Figure 3 indicates that, for Swedes, L1 has become even a more credible source of influence among 18-year-old pupils. The Finnish-speaking 18-year-old pupils, however, have abandoned L1 as a credible source of predicting L2 forms. Both in the multiple choice and completion test the drop in credibility was considerable. This drop in the belief in L1 probably suggests the use of a strategy of avoidance of L1 forms, most probably because prepositions do not exist in Finnish. The Finns' behaviour and reasoning is somewhat similar to that which was typical of the students' reactions to causative verbs and idiomatic expressions at stage 2 in the U-shaped curve. The difference is that in Kellerman's and Jordens's studies the drop in performance was caused by the discovery of a new semantic distinction in the equivalent L1 expression, whereas in the Finns' case it was probably their discovery of the absence of a reference frame in L1 (no prepositions in Finnish) that caused the readiness for avoidance. When it comes to correctness, there was, in fact, no decline in the second form among the Finns, but a slight rise. For the Swedes there was no difference between form 1 and 2 (Sjöholm 1986:129). Could it be the case that U-shaped behaviour occurs only in linguistic domains where there is an obvious reference frame in L1 ?

In another experiment Sjöholm (1986) gave a test on fixed expressions, idioms and the like to the same upper secondary school pupils. In addition to form 1 and form 2 at the "gymnasium" level, the test was also taken by Finnish- and Swedish-speaking applicants for English to the Department of English at Åbo Akademi (age 19-20). The total number of subjects taking part in the test was 723. The test battery consisted among other things of an equal number of Finnish- and Swedish-based idiomatic expressions (half of which were incorrect). The subjects were asked to either accept as English or reject as incorrect certain underlined idiomatic expressions in 60 English sentences. In figures 4 and 5 below, the percentage of accepted Swedish- and Finnish-based expressions are plotted down in diagrams.

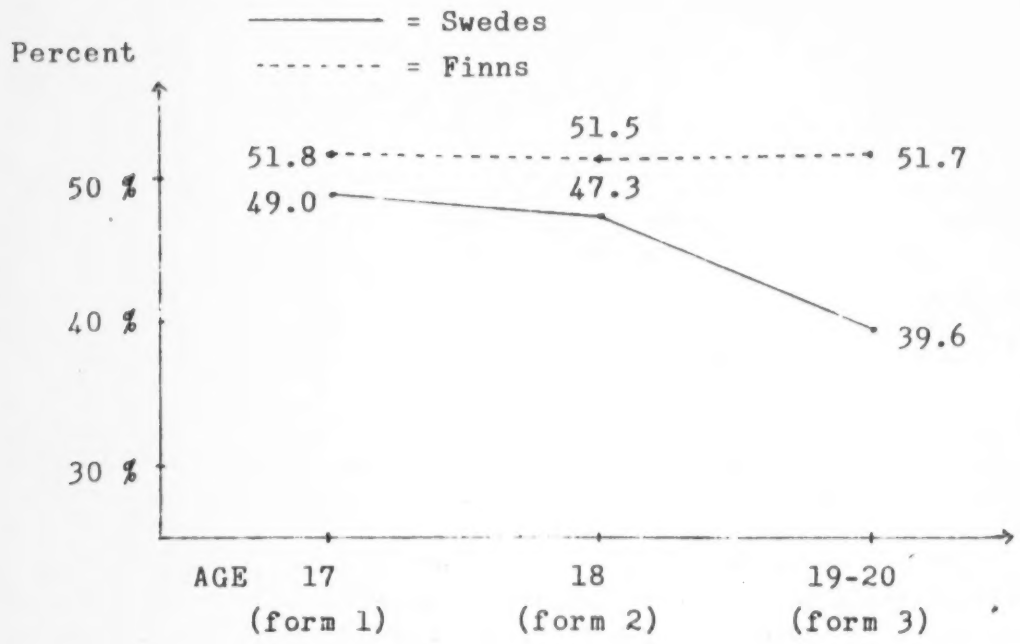

Figure 4. Swedish- and Finnish-speaking upper secondary school pupils' acceptance of Swedish-based "idioms" (correct or incorrect)(8 items)

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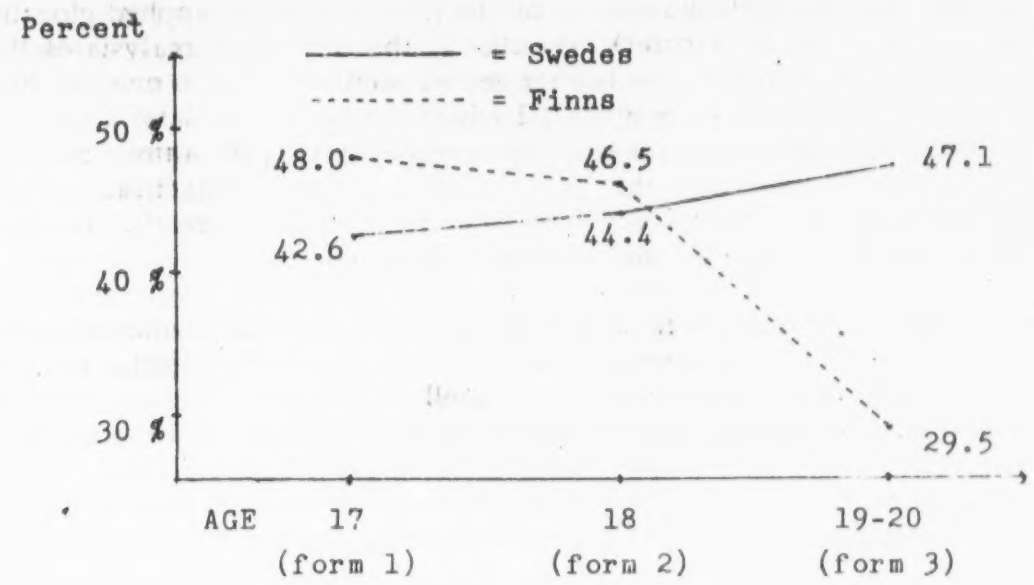

Figure 5. Swedish- and Finnish-speaking upper secondary school pupils' acceptance of Finnish-based "idioms" (correct or incorrect) (8 items)

It is interesting to note that a decline in the acceptance of Ll-based "idioms" is noticeable among Swedish- as well as Finnish-speaking pupils, especially in form 3. The drop in the acceptance rate could possibly be interpreted as stage 2 in the U-shaped curve. At this stage, the learners have realized that words usually have different meanings depending on whether they appear "freely" or as constituents in a larger lexicalized unit. The more figurative the meaning is in Ll, or the more it deviates from the core meaning of the equivalent free lexical item, the less transferable it is to L2.

6. Discussion

The purpose of this study was to account for U-shaped learning behaviour as it is evident in a number of different areas (children's learning of certain physical concepts, first language acquisition etc.) and try to apply it to L2-learning. In the first research question it was asked whether there is any general theoretical explanation of U-shaped curves which is also valid for data derived from L2-learning. It is maintained here that U-shaped learning behaviour can be characterized as the external manifestation of a more general cognitive process. Typical of the first stage is a global reasoning and an unanalyzed and undifferentiated representation of knowledge. In L2-learning, stage 1 can be characterized either by a subconscious and mechanical transference of Ll forms to L2 (positive

transfer with related languages) or by the L2 = Ll strategy applied globally (which also leads to transfer). At stage 2, the degree of analysis of the language input increases, the learner relates similar forms to one another, discovers hypothetical rules about L2 which are tested and later modified. The drop in performance is due to the application of "premature" rules of L2. At stage 3 the rules that morphologically and syntactically mark significant semantic distinctions tend to be fully consolidated (fixed rules). The learner has achieved a near-native competence in L2.

What then about the specific linguistic domains where the U-shaped curve is to be expected in L2-learning. Research into the field indicates that U-shaped language development (Ll as well as L2) occurs in the area of morphology, in phraseology and especially in connection with the learning of lexical items which convey complex semantic relations. What are the conditions that trigger off the development of U-shaped versus non-U-shaped language learning ? One condition seems to be that the language is such that the rules relating semantic distinctions to morphological forms are complex, admitting ad hoc classes (Strauss & Stein 1978:338). Another condition could, in L2-learning, be the existence of an obvious reference frame in Ll for the phenomenon in question. Dagut & Laufer (1985), for instance, found in a recent article that Hebrew learners of English avoid phrasal verbs such as 'let down', while preferring one-word verbs, such as 'disappoint', since phrasal verbs do not exist in Hebrew. Hulstijn & Marchena, who followed up Dagut & Laufer's studies, found that Dutch learners of English did not avoid phrasal verbs categorically (phrasal verbs do exist in Dutch), whereas they avoided those idiomatic phrasal verbs that were too Dutch-like, especially in an intermediate and advanced stage of learning.

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